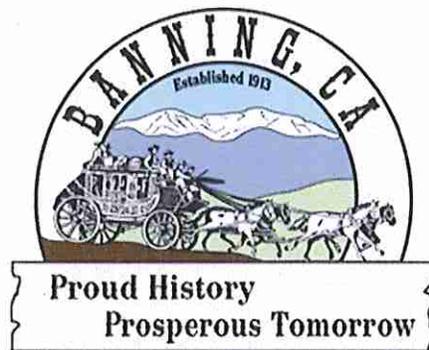


# City of Banning Electric Utility

AB 2514 Energy Storage Procurement Target Report



September 30, 2014

## **1. City of Banning Electric Utility**

The City of Banning ("City"), which comprises approximately 22.1 square miles, is located on Interstate 10 in the northwestern quadrant of Riverside County. The City is 85 miles east of Los Angeles, 27 miles east of the City of Riverside, and 20 miles west of Palm Springs.

The City of Banning's Electric Utility ("Electric Utility") was established in 1922, and is managed by the Electric Utility Director, under the direction and control of the City Manager and City Council. The Electric Utility is one of the smaller publicly owned electric utilities in the state of California, serving approximately 11,800 metered customers with a maximum peak demand of 47 MW.

## **2. Summary**

Assembly Bill No. 2514 ("AB 2514") requires each local publicly owned electric utility to initiate a process to determine appropriate targets, if any, for the utility to procure viable and cost-effective energy storage systems to be achieved by December 31, 2016, and December 31, 2021. AB 2514 indicates that publicly owned electric utilities need only adopt energy storage procurement targets if the targets are deemed to be appropriate, technologically viable, and cost effective. AB 2514 states that the governing board of each publically owned electric utility shall adopt procurement targets, if determined to be appropriate, by October 1, 2014, and reevaluate this determination not less than once every three years.

To comply with AB 2514, in March of 2012 the Electric Utility officially opened proceedings to determine if it was appropriate for the Electric Utility to set energy storage procurement targets. In conjunction with the Southern California Public Power Authority ("SCPPA"), the Electric Utility hired a third-party consultant, Navigant Consulting, Inc. ("Navigant") to perform a study on the costs and benefits of current energy storage technologies. Navigant created a framework and decision making tool for identifying, quantifying, and monetizing the benefits of energy storage systems. The Electric Utility utilized this tool in assessing the cost effectiveness and viability of procuring energy storage systems by the established target dates. Additionally, the SCPPA Energy Storage Working Group provided SCPPA members with their energy storage research paper entitled "Summary Review of the Technological Capabilities and Economics of Energy Storage System Development."

Based upon the modeling performed with the Navigant decision making tool, together with the SCPPA Energy Storage Working Group research, the Electric Utility determined that procuring energy storage systems is not cost effective at this time. Accordingly, on September 23, 2014, the City Council adopted Resolution No. 2014-65, indicating that the Electric Utility will not be adopting energy storage procurement targets at this time, due to the lack of cost-effective options. The Electric Utility will continue to monitor the energy storage industry as it matures, and will reevaluate the cost effectiveness of energy storage systems as the cost structures decline and / or as the benefits increase.

### **3. Navigant Decision Making Tool**

In order to assist its members to comply with AB 2514, SCPPA hired Navigant to perform a study on the costs and benefits of energy storage. Navigant created a framework and decision making tool for identifying, quantifying, and monetizing benefits of energy storage projects. In the framework, potential benefits are realized differently depending on the system characteristics (e.g., location on the grid, regulatory structure, & owner). The benefits are realized by using energy storage in three main categories: load leveling, grid operational support, and grid stabilization. Within these categories, each application of energy storage can lead to different economic, reliability, and environmental benefits.

The decision making tool is based in Microsoft Excel and takes a variety of inputs. The user first enters the project location, owner, regulatory environment and technology type. Next, the user enters cost and performance information such as installed cost, operation and maintenance costs, round trip efficiency and cycle life. Then the user selects which applications to analyze. Based upon the applications selected, the user is prompted to enter inputs to help calculate benefits, such as amount of energy storage dispatched by application, market prices and rates structures. Finally, the user has the option of selecting to run various scenarios. After inputting all the necessary information, the tool presents the net present costs and benefits of the applicable energy storage project.

The tool has gone through extensive review and usage. Sandia National Labs and the US Department of Energy (DOE) conducted formal peer reviews of the framework. The DOE has adopted this framework for use by 16 recipients of the Smart Grid Demonstration program and the framework has been presented at numerous energy storage conferences. In addition, it is similar to a Smart Grid framework that we have that has been reviewed by dozens of utilities and thought leaders as part of our work for the US Department of Energy on the Smart Grid Investment Grant program.

#### **4. Enclosures**

The following items are enclosed with this report:

- City of Banning Resolution No. 2012-29, opening the proceedings to determine the appropriateness of energy storage procurement targets.
- City of Banning Staff Report and Resolution No. 2014-65, indicating that it is not cost effective for the Electric Utility to adopt energy storage procurement targets at this time, due to the lack of cost-effective options.
- Sample model run of the Navigant decision making tool. This model run was performed using the most effective use of energy storage for the Electric Utility, which is load leveling.

**RESOLUTION NO 2012-29**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BANNING UPDATING THE STATUS OF BANNING ELECTRIC DEPARTMENT ENERGY STORAGE ACTIVITIES AND OPENING A PROCEEDING TO DETERMINE APPROPRIATE ENERGY STORAGE TARGETS**

**WHEREAS**, the City of Banning owns and operates its Municipal Electric Utility; and

**WHEREAS**, Assembly Bill 2514 (AB 2514) requires that the governing board of a publicly owned electric utility open a proceeding by March 2012 to determine appropriate targets, if any, for procuring technically viable and cost-effective energy storage systems; and

**WHEREAS**, under AB 2514 the City Council is required by October 1, 2013 to adopt an initial energy storage system procurement target, if determined to be appropriate, to be achieved by December 31, 2015, with a second target to be achieved by December 31, 2020; and

**WHEREAS**, City Staff will continue to evaluate viable and cost-effective energy storage system options, and will report back to Council by October 1, 2013;

**NOW, THEREFORE, BE IT RESOLVED** by the City Council of the City of Banning as follows:

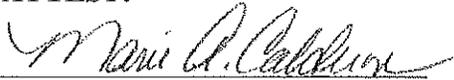
**SECTION 1:** Adopt Resolution 2012-29 and authorize the Mayor to sign said resolution.

**PASSED, APPROVED AND ADOPTED** this 27<sup>th</sup> day of March, 2012.



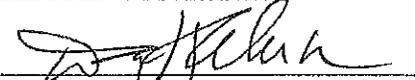
Don Robinson, Mayor  
City of Banning

**ATTEST:**



Marie A. Calderon, City Clerk

**APPROVED AS TO FORM AND  
LEGAL CONTENT:**

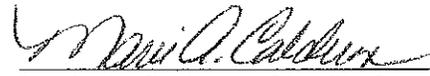


David J. Aleshire, City Attorney  
Aleshire & Wynder, LLP

**CERTIFICATION**

I, Marie A. Calderon, City Clerk of the City of Banning, California, do hereby certify that the foregoing Resolution No. 2012-29 was duly adopted by the City Council of the City of Banning, California, at a regular meeting thereof held on the 27<sup>th</sup> day of March, 2012, by the following vote, to wit:

AYES: Councilmembers Botts, Franklin, Hanna, Machisic, Mayor Robinson  
NOES: None  
ABSTAIN: None  
ABSENT: None

  
\_\_\_\_\_  
Marie A. Calderon, City Clerk  
City of Banning, California

## CITY COUNCIL AGENDA

**DATE:** September 23, 2014

**TO:** Honorable Mayor and City Council

**FROM:** Fred Mason, Electric Utility Director

**SUBJECT:** City Council Resolution No. 2014-65, Accepting the Recommendations of the Banning Electric Utility Energy Storage Study and Determining that it is Not Cost Effective For the Electric Utility to Adopt Energy Storage Targets

**RECOMMENDATION:** Adopt City Council Resolution No. 2014-65, accepting the recommendations of the Banning Electric Utility energy storage study, and determining that it is not cost effective for the Electric Utility to adopt energy storage targets at this time.

**JUSTIFICATION:** California legislation requires publicly owned electric utilities, such as the City of Banning, to perform specific activities pertaining to energy storage.

**BACKGROUND:** Assembly Bill 2514 (AB 2514) was signed by the Governor on September 29, 2010, and required the governing boards of local publicly owned electric utilities to open a proceeding by March 2012 to determine appropriate targets, if any, for procuring technically viable and cost-effective energy storage systems. Accordingly, on March 27, 2012 the City Council adopted Resolution No. 2012-29, opening the proceeding to determine if it was appropriate for the Banning Electric Utility to set energy storage targets.

Under AB 2514, the City Council is required by October 1, 2014 to adopt an initial energy storage system procurement target, if determined to be appropriate, to be achieved by December 31, 2016, with a second target to be achieved by December 31, 2021.

An energy storage system must be cost-effective and reduce emissions of greenhouse gases, reduce demand for peak electrical generation, defer or substitute for an investment in generation, transmission or distribution assets, or improve the reliable operation of the electrical transmission or distribution grid.

In order to assist its members to comply with AB 2514, the Southern California Public Power Authority (“SCPPA”) hired Navigant Consulting, Inc. (“Navigant”) to perform a study on the costs and benefits of energy storage. Navigant created a framework and decision making tool for identifying, quantifying, and monetizing the benefits of energy storage projects. In the framework, potential benefits are realized differently depending on the system characteristics (e.g., location on the grid, regulatory structure, and owner). The benefits are realized by using energy storage in three main categories: load leveling, grid operational support, and grid

stabilization. Within these categories, each application of energy storage can lead to different economic, reliability, and environmental benefits.

The tool has gone through extensive review and usage. Sandia National Labs and the US Department of Energy (DOE) conducted formal peer reviews of the modeling framework. The DOE has adopted this framework for use by 16 recipients of the Smart Grid Demonstration program and the framework has been presented at numerous energy storage conferences.

In order to document its compliance with AB 2514, the Banning Electric Utility participated in the SCPPA / Navigant project. The Electric Utility utilized the Navigant modeling tool to determine if it would be cost effective to set energy storage targets and to procure energy storage technology. The results of this study indicated that it would **not** be cost effective for the Banning Electric Utility to purchase energy storage at this time. In fact, the result of the study indicated that the current financial impact of purchasing an energy storage system is a **negative** net present value of \$4,927,000 over the 15-year life of the study.

Staff will continue to monitor the energy storage industry for technological breakthroughs that may make energy storage systems cost-effective in the future.

**FISCAL DATA:** Since the Banning Electric Utility will not be investing in energy storage systems, there are no fiscal impacts.

**RECOMMENDED BY:**

**APPROVED BY:**

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Fred Mason  
Electric Utility Director

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Homer Croy  
Interim City Manager

**REVIEWED BY:**

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June Overholt  
Deputy City Manager/Administrative Services Director

Prepared by Jim Steffens

**RESOLUTION NO 2014-65**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BANNING ACCEPTING THE RECOMMENDATIONS OF THE BANNING ELECTRIC UTILITY ENERGY STORAGE STUDY AND DETERMINING THAT IT IS NOT COST EFFECTIVE FOR THE ELECTRIC UTILITY TO ADOPT ENERGY STORAGE TARGETS**

**WHEREAS**, the City of Banning owns and operates its Municipal Electric Utility; and

**WHEREAS**, Assembly Bill 2514 (AB 2514) requires by October 1, 2014 that the governing board of a publicly owned electric utility adopt an initial energy storage system procurement target, if determined to be appropriate, to be achieved by December 31, 2016, with a second target to be achieved by December 31, 2021; and

**WHEREAS**, the Banning Electric Utility, in conjunction with other Southern California Public Power Authority members, obtained the services of Navigant Consulting for the purpose of determining the cost benefits of energy storage; and

**WHEREAS**, Navigant Consulting created a framework and decision making tool for identifying, quantifying, and monetizing the benefits of energy storage projects. The tool has gone through extensive review and usage. Sandia National Labs and the US Department of Energy (DOE) conducted formal peer reviews of the modeling framework. The DOE has adopted this framework for use by 16 recipients of the Smart Grid Demonstration program, and the framework has been presented at numerous energy storage conferences; and

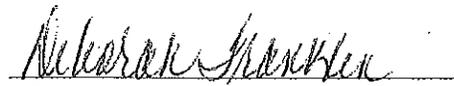
**WHEREAS**, the Banning Electric Utility utilized the Navigant Consulting tool to perform an energy storage study. The study determined that it was not cost effective, and therefore not appropriate, for the Banning Electric Utility to adopt energy storage procurement targets for the dates indicated in AB 2514.

**NOW, THEREFORE, BE IT RESOLVED** by the City Council of the City of Banning as follows:

**SECTION 1:** Adopt Resolution 2014-65 acknowledging that the City of Banning Electric Utility will not be adopting energy storage procurement targets at this time due to the lack of cost-effective options, and authorize the Mayor to sign said resolution.

**SECTION 2:** The Electric Utility Director will reevaluate this energy storage procurement target decision within three years as required by AB 2514.

**PASSED, APPROVED AND ADOPTED** this 23<sup>rd</sup> day of September, 2014.

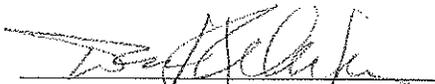
  
Deborah Franklin, Mayor  
City of Banning

**ATTEST:**



Marie A. Calderon, City Clerk

**APPROVED AS TO FORM AND  
LEGAL CONTENT:**



David J. Aleshire, City Attorney  
Aleshire & Wynder, LLP

**CERTIFICATION**

I, Marie A. Calderon, City Clerk of the City of Banning, California, do hereby certify that the foregoing Resolution No. 2014-65 was duly adopted by the City Council of the City of Banning, California, at a regular meeting thereof held on the 23<sup>rd</sup> day of September, 2014, by the following vote, to wit:

AYES: Councilmembers Miller, Peterson, Welch, Westholder, Mayor Franklin

NOES: None

ABSTAIN: None

ABSENT: None



Marie A. Calderon, City Clerk  
City of Banning, California

Reference Case Output  
Simple Payback  
NPV

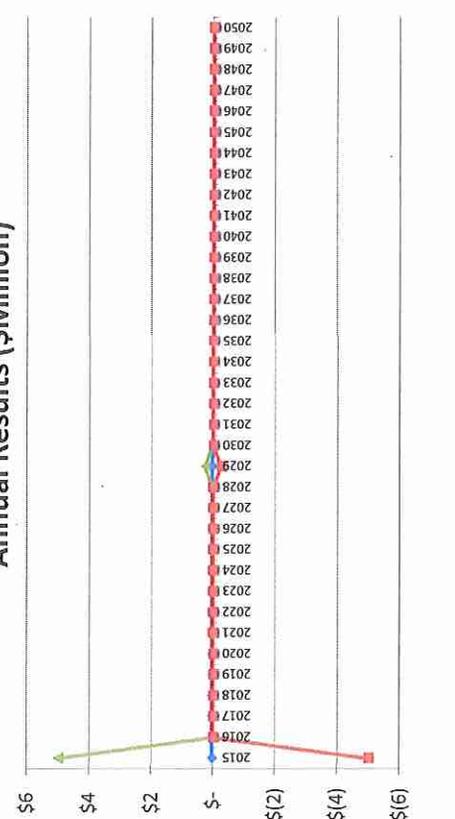
I/A  
(\$4,927,000)

Return to the Introduction Data Input Module Computational Module

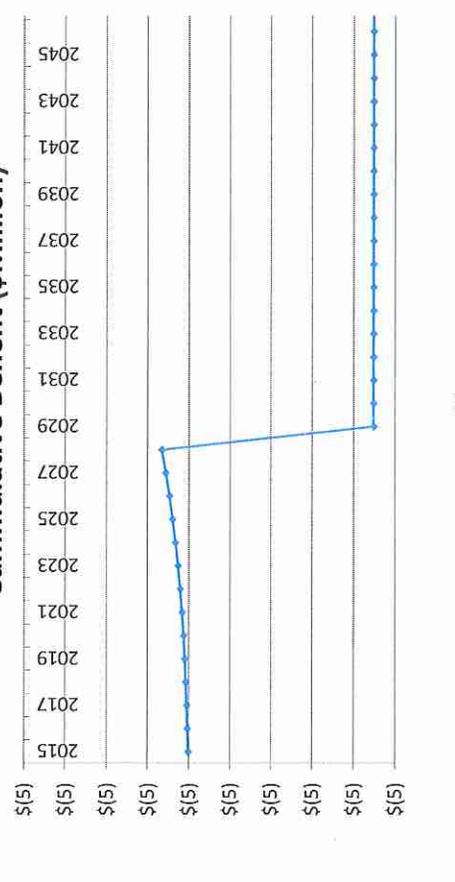
Select Beneficiaries  
Select the stakeholder to whom the benefits should accrue.  
Select only one stakeholder for each benefit.

	Utility	Blindings Authority	Customer	Society	2015	2016	2017	2018	2019	2020	2021	2022	2023
Wholesale Energy Market Revenue	1	0	0	0	\$ 16,500	\$ 16,500	\$ 16,500	\$ 16,500	\$ 16,500	\$ 16,500	\$ 16,500	\$ 16,500	\$ 17,300
Capacity Market Revenue	1	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Wholesale Energy Revenue	1	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Optimized Generator Operation (New Utility/Merchant)	1	0	0	0	\$ 2,300	\$ 2,300	\$ 2,300	\$ 2,300	\$ 2,300	\$ 2,300	\$ 2,300	\$ 2,300	\$ 2,300
Optimized Generator Operation (Utility/Rampspaw)	1	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Optimized Generator Operation (Deregulated)	0	1	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Reduced Congestion Cost (Regulated)	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Reduced Congestion Cost (Deregulated)	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Reduced Congestion Cost (Regulated)	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Reduced Congestion Cost (Deregulated)	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Deferred Generation Investments (Regulated)	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Deferred Generation Investments (Deregulated)	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Deferred Transmission Investments (Regulated)	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Deferred Transmission Investments (Deregulated)	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Deferred Distribution Investments	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Reduced Electricity Losses	0	0	0	0	\$ 3,500	\$ 3,500	\$ 3,500	\$ 3,500	\$ 3,500	\$ 3,500	\$ 3,500	\$ 3,500	\$ 3,800
Reduced Electricity Cost (Regularity)	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Reduced Electricity Cost (End User)	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Reduced Outages (Consumer)	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Reduced Outages (Utility/Rampspaw)	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Reduced Outages (Deregulated)	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Improved Power Quality	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Reduced CO2 Emissions	0	0	0	0	\$ 4,800	\$ 4,800	\$ 4,800	\$ 4,800	\$ 4,800	\$ 4,800	\$ 4,800	\$ 4,800	\$ 4,800
Reduced SO2 Emissions	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Reduced NOx Emissions	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Reduced Particulate Matter Emissions	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Reduced Water Use	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Utility Benefits					\$ 22,100	\$ 22,100	\$ 22,100	\$ 22,100	\$ 22,100	\$ 22,100	\$ 22,100	\$ 22,100	\$ 23,300
Balancing Authority					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Customer					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Societal Benefits					\$ 4,800	\$ 4,800	\$ 4,800	\$ 4,800	\$ 4,800	\$ 4,800	\$ 4,800	\$ 4,800	\$ 4,800
<b>Total Benefits</b>					\$ 27,900	\$ 27,900	\$ 27,900	\$ 27,900	\$ 27,900	\$ 27,900	\$ 27,900	\$ 27,900	\$ 29,600
<b>Costs</b>													
System Cost					\$ 5,000,000	\$ 5,000,000	\$ 5,000,000	\$ 5,000,000	\$ 5,000,000	\$ 5,000,000	\$ 5,000,000	\$ 5,000,000	\$ 5,000,000
Operating and maintenance costs					\$ 21,000	\$ 21,000	\$ 21,000	\$ 21,000	\$ 21,000	\$ 21,000	\$ 21,000	\$ 21,000	\$ 21,000
Decommissioning and Disposal Costs					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total Costs</b>					\$ 5,021,000	\$ 5,021,000	\$ 5,021,000	\$ 5,021,000	\$ 5,021,000	\$ 5,021,000	\$ 5,021,000	\$ 5,021,000	\$ 5,021,000
<b>Net Benefit (Cost)</b>					\$ (4,993,100)	\$ (4,993,100)	\$ (4,993,100)	\$ (4,993,100)	\$ (4,993,100)	\$ (4,993,100)	\$ (4,993,100)	\$ (4,993,100)	\$ (4,993,100)
<b>Cumulative Net Benefit (Cost)</b>					\$ (4,993,100)	\$ (4,993,100)	\$ (4,993,100)	\$ (4,993,100)	\$ (4,993,100)	\$ (4,993,100)	\$ (4,993,100)	\$ (4,993,100)	\$ (4,993,100)
<b>Simple Payback</b>													
<b>NPV</b>													

Annual Results (\$Million)



Cumulative Benefit (\$Million)



Utility Benefits Total Costs Net Benefit (Cost)

